

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files

DATE: 19 March 1956

FROM :

[REDACTED]

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SUBJECT: Preliminary Report on the [REDACTED] Adaptor A-3 Modification

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1. In making a preliminary investigation as to the feasibility of modulating the [REDACTED] Adaptor several problems become apparent.

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2. Before these problems became apparent, however, numerous attempts were made to accomplish modulation by the direct use of a carbon microphone without the use of additional circuitry. In brief, these were:

- A. Absorption Modulation: The microphone was put in series with a loop around the final tank coil. Amplitude modulation is accomplished by the absorption of RF energy from the tank coil. In this case the microphone did not control the absorption enough to give a detectable percentage of modulation.
- B. Cathode Modulation: The microphone was placed in series with the cathode in an effort to vary the plate current, thus giving modulation. Again the amount of control was not adequate to give a detectable percentage of modulation.
- C. Screen Grid Modulation: The microphone was placed in series with the screen dropping resistor. There was a perceptible amount of modulation at the screen itself, but again did not control the output enough to give a detectable percentage of modulation.

The possibility of control grid modulation still exists but as yet has not been investigated.

3. After trying the above methods, it became apparent that additional circuitry would be necessary to accomplish modulation. Two problems now become apparent.

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- A. If vacuum tubes are used it will limit the adaptor's use to receivers for AC operation only. This is due to the filament requirement for the additional tube. By using clamp type modulation on the screen grid, no modulation transformer will be required, thus enabling the modification to be made on the present chassis without increasing the present volume of the unit, microphone excepted.
- B. In order to keep the adaptor (R&D modified version) as flexible as possible, that is for use on AC-DC receivers, transistors must be used. However, with transistors it will be necessary to use a modulation transformer in either the plate or screen circuits. This is due to the impedance problem, also the current problem. In using a transformer, the present adaptor case depth will have to be almost doubled, or a separate case made which would plug into the adaptor. This additional case would be approximately one-half the size of the adaptor case.

4. On the assumption that a better modulating method will not be found, it would be desirable at this point to determine operationally whether method 3A or 3B will be the most suitable system to use, taking into account the shortcomings of each method.



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